# Fire Weather Annual Summary - 2005 For Eastern Washington And

Northern Idaho

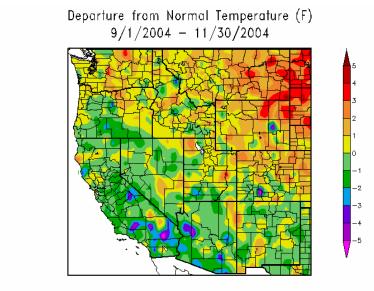


By
Bob Tobin - Fire Weather Program Leader
Ron Miller - Science and Operations Officer

**John Livingston - Meteorologist - In – Charge** 

#### **Review of the 2005 Seasonal Weather**

**Fall 2004 -** The first half of October was warmer than normal, with temperatures remaining in the 70s and even the lower 80s. A rainy front in the middle of the month moved through the region for cooler temperatures. Most sites picked up about a half inch of rain as temperatures dropped into the 40s and 50s.



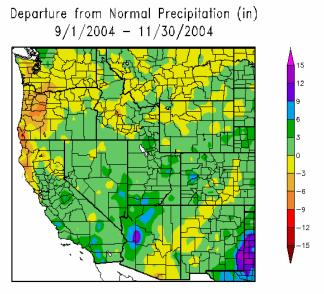
pressure dominated the area for the first 2 weeks of November, bringing extensive fog and low clouds to the region. This weather pattern isn't unusual for the middle of winter, but it is a bit atypical for early November. The high pressure moved west a bit and took up residence offshore for the remainder of the month. This allowed a few weak storms to move into the Inland Northwest, bringing with them only light amounts of rain.

A strong ridge of high

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Spokane received its first inch of snow on the last day of November, nearly 3 weeks late. Overall, November was very dry. The 0.08" at the Wenatchee Airport was the 3<sup>rd</sup> driest November since 1959. At Wenatchee Water Plant, only 0.15" fell, which was the 3<sup>rd</sup> driest November since 1931.

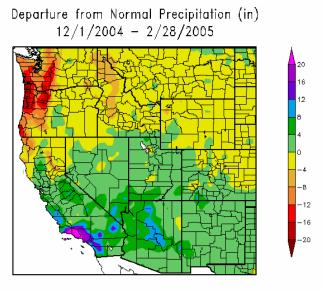


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#### Winter 2005

December started pretty normally. A couple of weather systems moved into the area during the first week bringing pretty decent snow amounts to mainly the northern portions of the region. Much of this snow quickly melted as temperatures warmed into the 40s and lower 50s after December 10th. While many of the towns near the Canadian border did see additional snow, the month of December was much warmer and drier than normal.



January was divided into two very distinct weather regimes. The first half resembled a typical winter. Temperatures remained at or below normal as snowstorms persisted from the first 9 days of the month. Then came the arctic air from Canada with temperatures dropping to well below normal. The cold spell was short lived as a warm Pacific storm pushed out the chilly arctic air on January 15th.

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The exception to this quick warm up occurred in the valleys of the Cascades, where the dense sub-freezing air remained bolted to the valley floors. As the temperatures warmed, ice jams on rivers in the Idaho Panhandle as well as in the Cascades resulted in minor flooding. Heavy rain near the crest of the Cascades also caused some significant river rises.

While the first half of January was cold and snowy, the second half of the month was the warmest last two weeks of January ever!

February can be summed up in one word: **dry!** It was the driest February on record for nearly every location in the Inland Northwest. A

Departure from Normal Temperature (F)

12/1/2004 - 2/28/2005

Generated 7/19/2005 at HPRCC using provisional data.

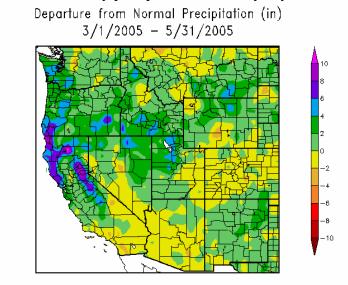
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large area of high pressure remained parked over the region, shunting Pacific storms either well to our north into Canada or to our south into California. However, rather than the usual fog and low clouds we commonly see in this pattern, there was a persistent dry flow from the north which kept the fog at bay.

THE FOLLOWING	CITIES TIED	OR BROKE RECORDS	FOR THE DRIEST FEBRUARY ON	N
RECORD.				
WASHINGTON	FEB/05	OLD RECORD	RECORDS KEPT SINCE (	YR)
BOUNDARY DAM	0.02	0.36 1993	1965	
CHEWELAH	0.00	0.13 1929	1925	
DAVENPORT	TRCE	0.07 1920	1893	
ENTIAT	0.29	0.52 1991	1989	
GRAND COULEE	0.01	0.03 1966	1935	
LACROSSE	0.27	0.28 1934	1931	
MAZAMA	0.17	0.26 1993	1948	
NEWPORT	TRCE	0.23 1929	1909	
NORTHPORT	TRCE	0.11 1964	1899	
OMAK	0.03	0.04 1932	1931	
PULLMAN	0.10	0.45 1977	1940	
QUINCY	0.00	0.00 1988	TIED 1941	
ROSALIA	0.00	0.12 1903	1893	
RITZVILLE	TRCE	0.01 1998	1899	
SPOKANE	0.04	0.09 1929	1881	
STEHEKIN	0.61	0.74 1929	1906	
SMYRNA	0.00	0.00 1988	TIED 1951	
ST. JOHN	0.29	0.33 1994	1963	
WINTHROP	0.01	0.07 1929	1906	
IDAHO	FEB/05	OLD RECORD	RECORDS KEPT SINCE (Y	YR)
BONNERS FERRY	0.15	0.26 2001	1907	
CABINET GORGE	0.26	0.43 1993	1954	
COEUR D'ALENE	0.02	0.21 1928	1895	
NEZ PERCE	0.27	0.33 1998	1901	
PRIEST RIVER	0.20	0.57 1913	1898	
POTLATCH	0.14	0.28 1920	1915	
SANDPOINT	0.15	0.37 1920	1910	

#### **Spring 2005**

March began on much the same note as February: dry and mild. The first half of the month saw little if any precipitation and every day was warmer than normal. The storm



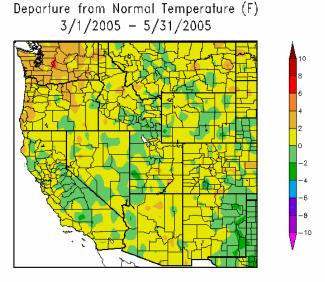
Generated 10/21/2005 at HPRCC using provisional data.

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door finally opened on the 16th with a wet and windy Pacific storm. The weather pattern remained stormy for the rest of the month. Most locations in extreme eastern Washington and the Idaho Panhandle wound up with near to above normal precipitation for March. However, the east slopes of the Cascades remained dry. By the end of the month, Wenatchee had received only 54% of their normal precipitation for the winter, with Spokane and Lewiston

at 65% and 75% respectively.

April saw a continuation of the cool and unsettled weather for the first half of the month. The rainfall during this period, while frequent, was on the low side. Temperatures remained below normal. High pressure finally built over the western U.S. in the latter half of the month, bringing more springlike weather to the area. Temperatures warmed into the 70s and even a few lower 80s by the 26th. But as is usually the case in spring, the warm spell was short lived. A mainly dry cold front dropped temperatures back into the 50s and 60s for the end of the month.



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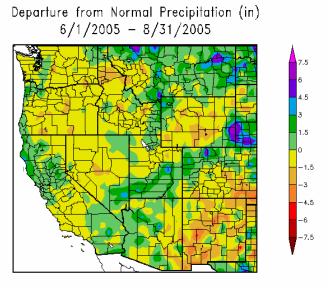
The drought conditions had not improved much. Wenatchee now had only 50% of their normal precipitation, Spokane remained steady at 65%, and Lewiston improved slightly to 82%.

May is typically a wet month for the Inland Northwest, and 2005 was if anything more than typical. During most of May, several large and slow moving Pacific storms affected the Northwest, producing broad swaths of rain. The result was flooding and flash flooding on mainly small, un-gauged streams and creeks. The weather finally dried out just in time for the Memorial Day weekend. Temperatures quickly jumped into the 80s for the first time and reached the lower 90s in some locations. For the month, Spokane had its 4th wettest May ever. Even so, the rains in May did little to help the drought in the Cascades. Wenatchee had still only received 56% of its normal precipitation for the season. Spokane reported 84% precipitation, and Lewiston was now 103% of normal.

#### **Summer 2005**

The wet May had helped to mitigate some drought concerns after our very dry winter. Hopes were high that this would continue into June. For the Idaho Panhandle and extreme eastern Washington, June did bring more than the normal amount of rainfall. Unfortunately the Cascades remained very dry. Wenatchee reported only a tenth of their normal June rainfall, all of which fell on one day. The first half of June saw persistent cool and showery weather. Temperatures were consistently in the 60s and 70s. A sudden warm up on the 20th and 21st made it feel like summer had finally arrived in the Inland Northwest. But in typical spring-like fashion, the warm spell was short lived as a large thunderstorm moved across the region. A strong gust front moved outward from the thunderstorm, resulting in a 77 mph gust at the Spokane Airport.

The first week in July brought 90° temperatures throughout the area. One last spring-like system managed to move into the region on the 9th and 10th, but temperatures quickly rebounded into the 90s and triple digits for the remainder of July.



Generated 12/1/2005 at HPRCC using provisional data.

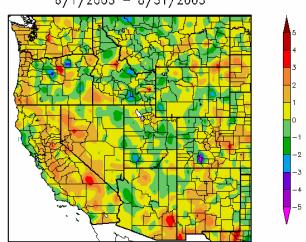
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Lewiston's thermometer reached 105° on the 21st for their hottest day of the summer. But the hottest period was the last few days of the month, where Lewiston hit the century mark 4 of the last 5 days. Once again, little if any rainfall occurred along the east slopes of the Cascades. By the end of July, the Wenatchee Airport had totaled only 3.97" of precipitation for the water year (beginning Oct 1st, 2004). This was the 4th driest ever since 1959.

The hot weather continued into the first part of August, but the heat finally broke as

cooler air from Canada began to slowly move into the area. By the 12th, temperatures were back to more normal readings. It was on this day that a cold front from British Columbia moved down from the north. This was a rather rare event for mid- August. Strong gusty winds developed that formed an impressive dust cloud which enveloped much of the Columbia Basin with nearzero visibilities. In addition, downed power lines and lightning also caused a

Departure from Normal Temperature (F) 6/1/2005 - 8/31/2005



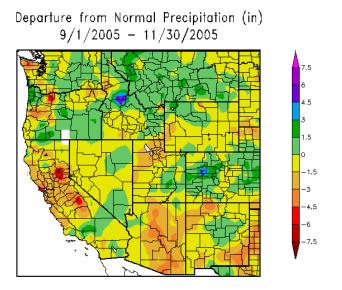
Generated 12/1/2005 at HPRCC using provisional data.

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number of fires especially in the Spokane area. After this event, the weather was decidedly different. Hot spells were once again short lived, and brief wet periods brought small amounts of rain to many locations.

#### Fall 2005

**September** began with the last few warm days of summer. Temperatures climbed into the 80s across the region and touched 91° in Lewiston on the 9th. But temperatures were nearly 30 degrees cooler only a couple of days later as a Pacific cold front brought light



precipitation to the region on the 11th and 12th.

Although brief warm-ups were still to come, this system was essentially the beginning of the fall weather. The rest of the month was still fairly warm and sunny until another front arrived at the very end of the month and brought almost three quarters of an inch of rain to Spokane.

Generated 12/2/2005 at HPRCC using provisional data.

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October started cool and ended mild, rendering the month nearly constant in temperature. Showery and cool 50s and 60s prevailed for the first week as temperatures were nearly 10 degrees cooler than normal. By the middle of the month mild and sunny conditions had returned. Temperatures climbed well into the 70s in mid October, 10 or more degrees

above. Even Spokane did not record a freezing temperature in the month of October, a feat that hadn't occurred since 1952!

By the end of the month, the weather pattern had returned to a more typical one: cool and showery.

**November** saw cooler than normal temperatures for the first half of the month with intermittent periods of precipitation. Spokane even recorded its first inch of snow Generated 12/2/2005 at HPRCC using provisional data.

Departure from Normal Temperature (F) 9/1/2005 - 11/30/2005

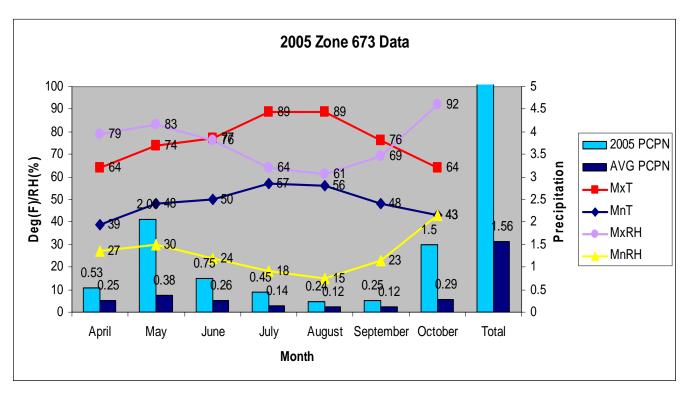
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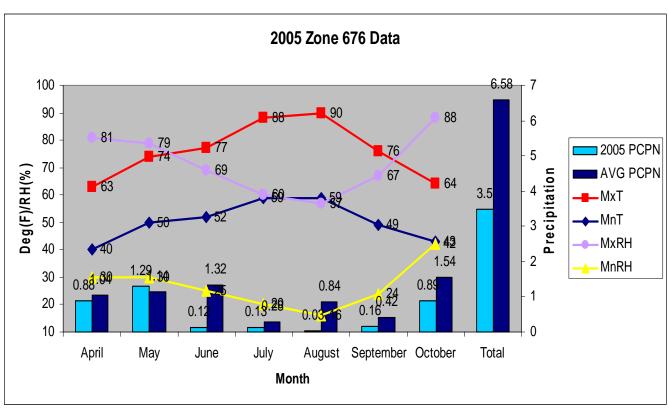
on the 13<sup>th</sup>. But once again, high pressure built into

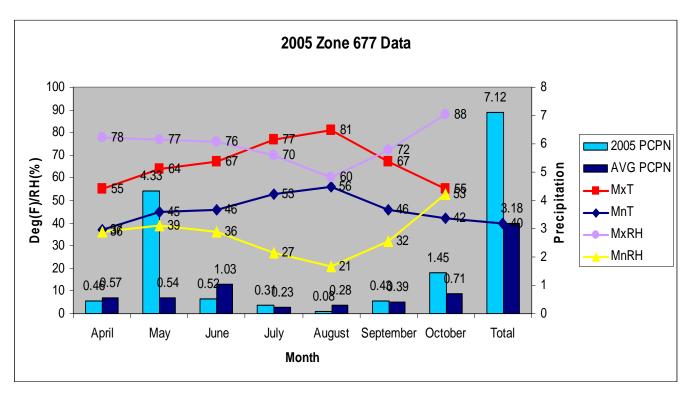
the area. But while this pattern brings warm weather during September or October, in the low sun angle month of November it brings fog and low clouds. The stagnant conditions persisted through the Thanksgiving holiday. A weak front managed to slip through the ridge the next day and bring some freezing rain to the area. After that conditions became wintry, as snow returned to much of the area.

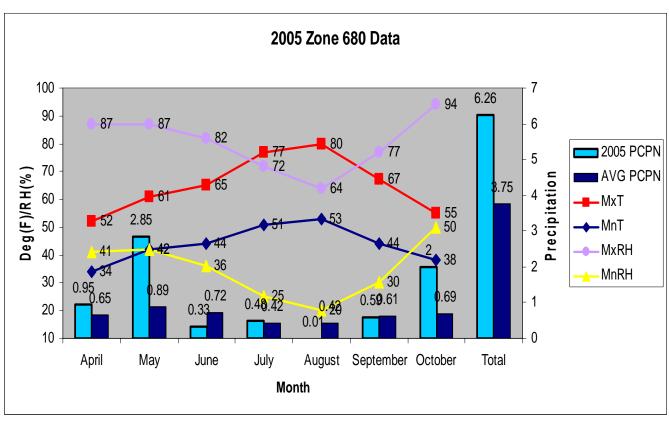
## **Yearly Summaries:**

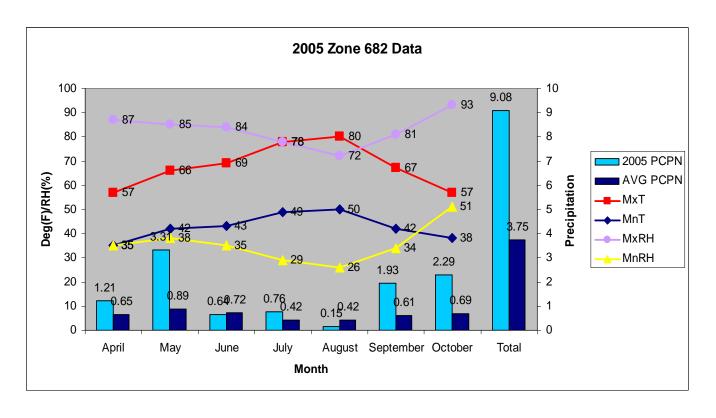
Wenatchee, WA													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Average High Temperature	31.5	47.4	57.2	62.9	72.7	77.1	88.0	89.0	75.2	61.9	41.4	29.5	61.2
Departure From Normal	-2.4	5.8	3.6	0.0	1.2	-1.6	1.3	2.9	-1.3	0.2	-2.5	-4.0	0.3
Average Low Temperature	23.2	27.0	36.6	41.1	50.8	54.4	61.6	61.8	51.8	43.2	30.4	21.8	42.0
Departure From Normal	1.4	0.3	3.0	1.2	3.5	0.5	1.8	2.1	0.9	3.1	0.0	-1.1	1.6
Precipitation	1.00	0.18	0.21	0.05	0.77	0.06	0.06	0.02	0.09	0.46	1.57	0.59	5.06
Departure From Normal	-0.14	-0.68	-0.47	-0.42	0.16	-0.58	-0.24	-0.33	-0.34	0.01	0.42	-0.84	-3.45
	_												
Spokane, WA													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Average High Temperature	34.5	44.7	51.8	58.5	66.6	70.7	83.7	83.9	69.3	57.1	39.2	30.4	57.5
Departure From Normal	1.7	5.4	3.2	1.0	0.4	-3.2	1.2	1.3	-3.2	-1.4	-1.9	-2.4	0.2
Average Low Temperature	22.1	24.4	31.8	37.5	47.0	50.0	56.5	55.2	45.7	40.8	29.0	17.8	38.2
Departure From Normal	0.4	-1.3	1.4	2.0	4.4	0.8	1.9	0.7	-0.2	5.0	0.3	-3.8	1.4
Precipitation	1.15	0.04	2.03	0.79	3.58	1.38	1.10	0.46	0.84	1.03	2.06	2.96	17.42
Departure From Normal	-0.67	-1.47	0.50	-0.49	1.98	0.20	0.34	-0.22	0.08	-0.03	-0.18	0.71	0.75
Lewiston, ID													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Average High Temperature	44.2	49.8	58.6	63.5	71.5	75.9	92.2	90.9	76.6	63.9	46.5	37.4	64.3
Departure From Normal	4.8	4.2	4.8	1.9	1.6	-2.0	4.6	3.3	-0.1	2.0	-0.3	-1.8	1.9
Average Low Temperature	31.7	28.5	37.1	41.3	49.6	52.9	61.0	59.4	49.4	43.9	34.2	26.3	42.9
Departure From Normal	3.8	-2.7	1.5	0.7	2.7	-0.7	1.7	0.1	-1.5	2.7	0.1	-2.2	0.8
Precipitation	0.31	0.19	1.05	1.53	3.22	1.30	0.26	0.05	0.17	1.66	0.48	1.64	11.86
Departure From Normal	-0.83	-0.76	-0.07	0.22	1.66	0.14	-0.46	-0.70	-0.64	0.70	-0.73	0.59	-0.88

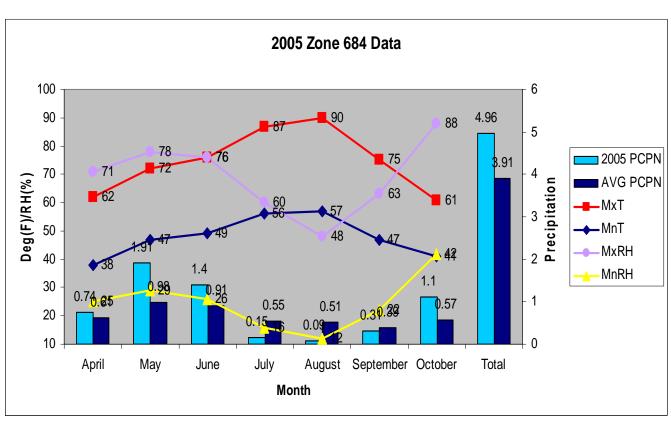


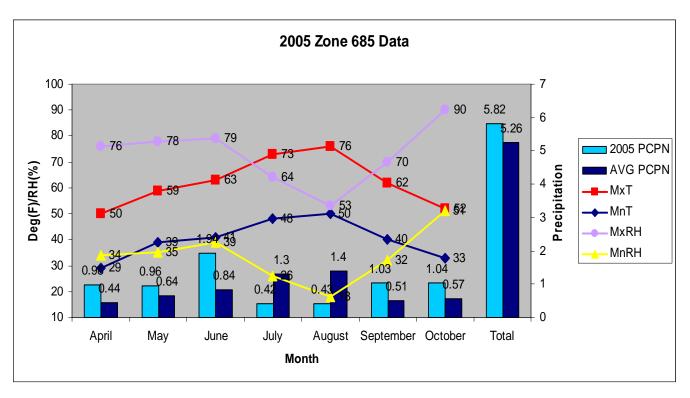


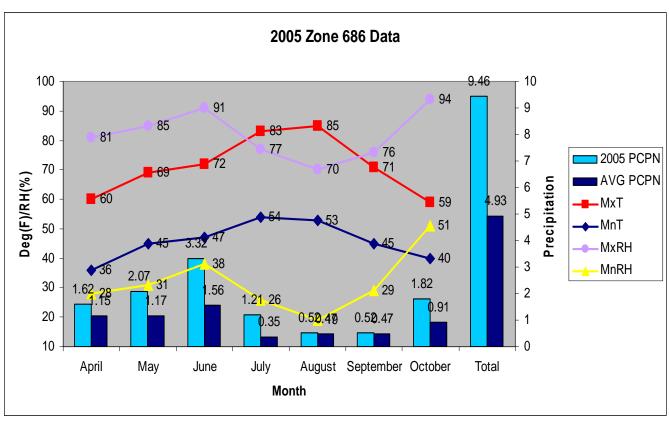


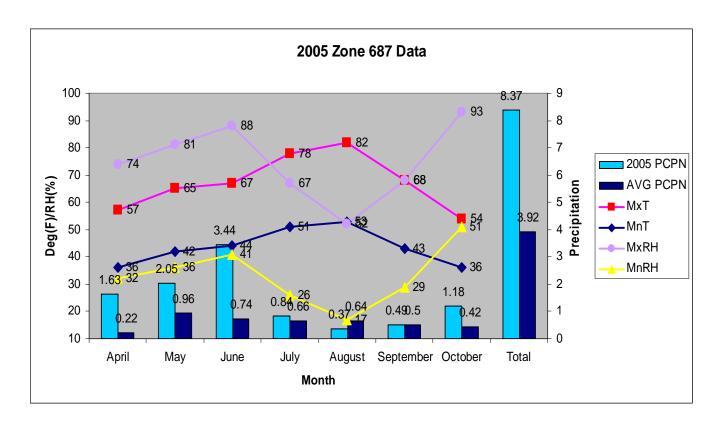


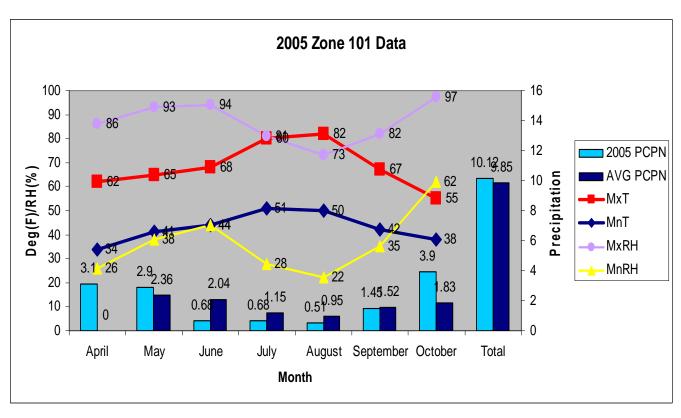












## Spokane 2005 Red Flag Warnings/Watches

Date	Zones	Reason	Verification	Lead Time
July 18	673, 676, 677, 684, 686	Wind/Low RH	Yes – 676, 677, 686 No – 673, 684 Not preceded with a watch	1
July 21	673, 676, 677, 684	Dry Ltg	Yes – 673, 676, 677 No – 684 Preceded by Watch	15
July 25	673	Wind/Low RH	Yes – 673 Not preceded with a watch	2
Aug 1	673, 686, 687, 101	Dry lightning	Yes – 686 No – 673, 687, 101 Preceded with a watch	15
Aug 9	684, 685, 686, 687, 101	Dry lightning	Missed – 684, 685, 686, 687, 101 (Numerous lightning strikes in all zones)	0
Aug 12	684	Wind/Low RH	Yes – 684 Not preceded with a watch	1

Total Warnings: 15 Dry Lightning: 8 Wind/low RH/Haines: 7 Correct Warnings: 9 Incorrect Warnings: 6 Missed Warnings: 5

Warnings Preceded with a Watch: 8 of 15 or 53%

Probability of Detection: Dry Lightning .44 Wind/low RH/Haines 1.00 All .64

False Alarm Rate: Dry Lightning .50 Wind/low RH/Haines .29 All .40

Critical Success Index: Dry Lightning .31 Wind/low RH/Haines .71 All .45

# **All Warnings**

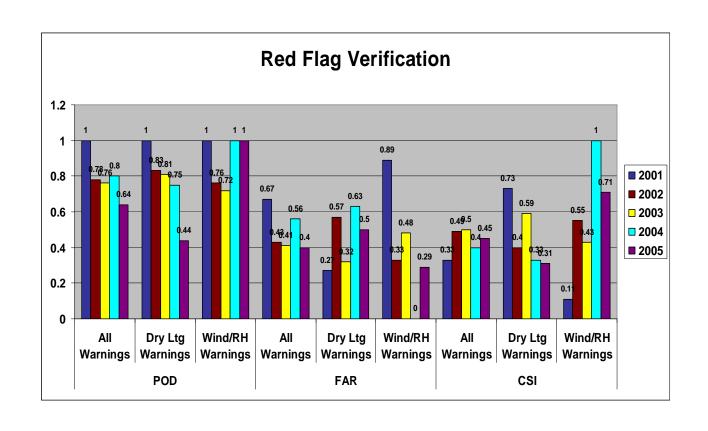
All RFW by Month	JUN	JUL	AUG	SEP	OCT	Season
Warnings	0	10	5	0	0	15
Warned Events	0	7	2	0	0	9
Unverified Warnings	0	3	3	0	0	6
Missed Events	0	0	5	0	0	5
Total Events	0	7	7	0	0	14
POD	0	1.00	0.29	0	0	0.64
FAR	0	0.40	0.60	0	0	0.40
CSI	0	0.60	0.20	0	0	0.45

# Warnings for Dry Lightning

RFW for <b>Dry Lightning</b>	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	2	1	1	0	0	1	0	1	1	1	8
Verified Warnings	1	1	1	0	0	0	0	1	0	0	4
Unverified Warnings	1	0	0	0	0	1	0	0	1	1	4
Missed Events	0	0	0	0	0	1	1	0	1	1	5
Total Events	1	1	1	0	0	1	1	1	1	1	9
Lead Time (hours)	15	15	15	0	0	0	0	8	0	0	7
POD	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.44
FAR	0.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.50
CSI	0.50	1.00	1.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.31

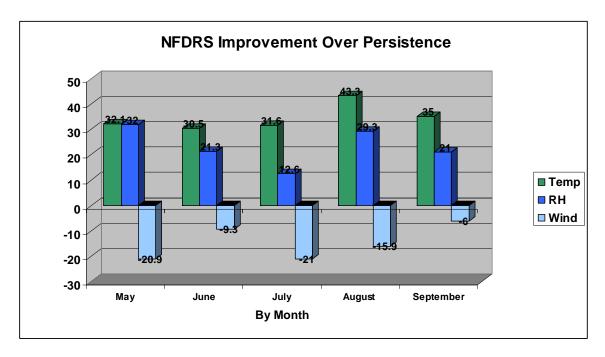
# Warnings for Low RH Combined with Wind or Haines

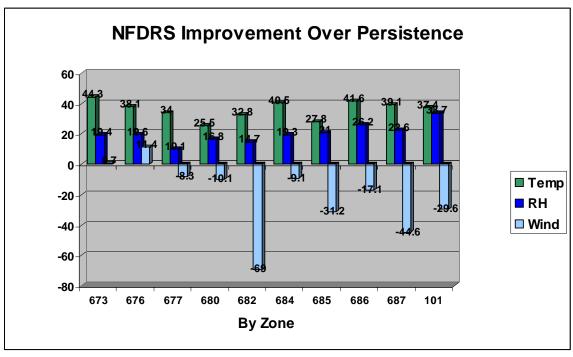
RFW with Low RH	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	2	1	1	0	0	2	0	1	0	0	7
Verified Warnings	1	1	1	0	0	1	0	1	0	0	5
<b>Unverified Warnings</b>	1	0	0	0	0	1	0	0	0	0	2
Missed Events	0	0	0	0	0	0	0	0	0	0	0
Total Events	2	1	1	0	0	1	0	1	0	0	5
Lead Time (hours)	2	1	1	0	0	1	0	1	0	0	1
POD	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
FAR	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.29
CSI	0.50	1.00	1.00	0.00	0.00	0.50	1.00	0.00	0.00	0.00	0.71



#### **NFDRS Verification**:

NFDRS forecast verification was accomplished by comparing the average forecast values derived from the 2 p.m. zone trend forecasts, with the 2 p.m. NFDRS Fire Weather Zone observation averages for the following day. While not the most accurate method of verifying NFDRS forecasts, it is the best method available at the present time. Numerous problems of poor quality data, missing data, or late-arriving data continue to hinder forecast verification procedures and performance





### **2005** Fire Season Fire Activity Summary

The total number of fires, lightning fires, and total acres in eastern Washington and north Idaho in 2005 were all well below the ten year average. This was most likely the result of the wet spring and lack of lightning during the peak burning season.

Below is a list of all fires of large fires by agency.

PerryGin Fire	530 acres	7/03/05	USFS, DNR, Pvt
Wenas Fire	250 acres	7/05/05	DNR
West Omak Lake Fire	11,300 acres	7/12/05	BIA
District 2 Fire	108 acres	7/20/05	IDL
Wall Lake Fire	579 acres	7/27/05	USFS, BLM, Pvt
<b>Dirty Face Fire</b>	1150 acres	7/30/05	USFS, DNR
Lick Creek Fire	735 acres	8/04/05	DNR
School Fire	24,960 acres	8/05/05	USFS, DNR, Pvt
<b>Burnt Bread Fire</b>	1355 acres	8/06/05	DNR
<b>Cottonwood Fire</b>	250 acres	8/10/05	IDL
Irby Fire	456 acres	8/12/05	SPD
Windy Watt	220 acres	8/12/05	DNR
Yale Fire	125 acres	8/16/05	DNR
Squaw Crk Fire	1097 acres	8/18/05	BLM
Mud Creek Fire	250 acres	9/19/05	DNR
Martin Road Fire	895 acres	9/28/05	DNR

# Fire Data of Customer Agencies - 2005

Agency	Lightning Caused Fires	Acres Burned	Human Caused Fires	Acres Burned	Total Fires	Total Acres Burned
SE DNR	5	2	124	4765	129	4767
NE DNR	48	124	203	3721	251	3845
Colville BIA	13	124	63	16,054	76	16,178
Okanogan- Wenatchee NF	40	50	47	1906	87	1956
Colville NF	31	24	8	4	39	28
Idaho Panhandle	75	18	117	833	193	851
FWS	1	0	6	4949	7	4949
BLM	2	6	4	780	6	786
Spokane BIA	2	16	17	647	19	663
Total	217	364	589	33,662	807	34,023

Fire Data by Year: 1970-2005

Year	Total Fires	Lightning Caused Fires	Total Acres Burned
1970	1,303	488	215,037
1971	606	127	3,902
1972	747	253	2,111
1973	1,079	123	11,223
1974*	1,103	238	9,466
1975	953	337	4,807
1976	740	117	32,272
1977	983	591	16,342
1978	790	339	2,361
1979	1,263	446	17,090
1980	613	243	3,465
1981	930	482	16,894
1982	910	368	5,776

1983	595	176	2,453
1984	879	406	5,757
1985	1,112	355	71,488
1986	865	295	9,727
1987	1,057	348	18,214
1988	689	84	89,140
1989	1,088	399	14,259
1990	1,203	583	15,324
1991	1,080	430	47,928
1992	959	368	33,819
1993**	655	186	3,295
1994	1,433	648	260,245
1995	792	211	4,002
1996	739	205	35,375
1997	467	247	5,283
1998	969	439	50,943
1999	951	283	13,128
2000***	827	435	259,024
2001	953	507	182,468
2002	1,157	465	70,814
2003	1,027	416	147,130
2004	1,314	819	86,705
2005	807	217	34,023
1			

<sup>\*</sup> Colville NF not included in years prior to 1974 \*\* Spokane IA not included in years prior to 1993 \*\*\*Added Northern Idaho Panhandle District in 2000

# **FORECASTS 2005**

		itine ecast	Spot Forecast		Red Fla	ng Events	Zone Trend
Mo.	FW Fcsts	LM Fcsts	Wildfire PNF	Prescribed Fires	FWX Watch	Red Flag Warning	NFDRS Fcsts
Jan	0	31	0	6	0	0	0
Feb	0	28	0	12	0	0	0
Mar	18	20	0	60	0	0	0
Apr	42	0	0	101	0	0	0
May	62	0	5	56	0	0	3
Jun	60	0	4	12	0	0	30
Jul	62	0	33	2	4	10	31
Aug	62	0	82	2	4	5	31
Sep	60	0	13	53	0	0	30
Oct	58	0	7	97	0	0	15
Nov	0	30	0	19	0	0	0
Dec	0	31	0	3	0	0	0
Total	424	140	144	421	8	15	140

#### OPERATIONAL SUMMARY OF THE 2005 FIRE SEASON

Winter land management forecasts were issued once a day five days a week through the winter and early spring months. Fire weather full service forecast support (forecasts issued twice daily, seven days a week) started March 21<sup>st</sup>. Full service forecast support continued until October 29<sup>th</sup>. Land management forecast support commenced on November 21<sup>st</sup>. Land management forecasts again were issued once a day as a planning guide for land management agencies through the winter months.

This season, WFO Spokane Fire Weather Program issued a total of 565 spot forecasts for management planned activities and wild fires. This spot forecast total is very close to the average number of spots for the past 5 years.

The Internet spot forecast request system continues to offer land management agencies rapid turn-around for their spot requests. The rapid response time has allowed for more spot forecasts to be processed.

WFO Spokane again hosted a daily internet briefing through the peak fire season. This is an excellent opportunity for the weather forecasters to share their thoughts with the land managers and receive feedback of forecasts.

IMET & Dates Dispatched	Incident Name and Location	Incident Team
Bob Tobin 7/13-7/17/05	West Omak Lake Fire	Reed/Halloway
Bob Tobin 8/02-8/11/05	Mule Peak Fire	Carl West
Rocco Pelatti 8/05-8/14/05	Lick Creek Fire	Berndt
Bernie Meyer 8/06-8/15/05	Dirty Face	Furlong/Gormley
Todd Carter 8/16-8/25/05	Burnt Cabin	Alan Johnson
John Werner (T) 8/22-26/05	Blossom Complex	Lohrey
Bob Tobin 8/26-9/02/05	Red River Complex WFU	George Weldon